

MINNESOTA ENERGY RESOURCES - NNG

DESIGN-DAY DEMAND SUMMARY

NOVEMBER 1, 2018

NNG

Design Day Requirement		273,842
Total Peak Day Entitlement		277,256
2017/18 Firm Peak Day Actual Sendout	12/31/2017	233,945
Firm Annual Throughput - Minnesota		24,507,563
No. of Firm Customers		198,628
Department Load Factor Calculation		28.70%

MINNESOTA ENERGY RESOURCES - NNG

NNG MINNESOTA DESIGN DAY REQUIREMENTS

NOVEMBER 1, 2018

NNG

Pipeline Group	2017/18 Customer Count	Zone Total Customer Count	1/20 Design DDD	Regression Factors		Regression Total	Regression Adjustment	1/20 Requirements Regression Load	Estimated Contract Demand Units	Total *
				Intercept	Slope					

PEAK										
NNG Total	198,628	198,628	99	12,917	2,525	261,635	12,112	273,747	95	273,842
	198,628	198,628								273,842

OFF PEAK										
NNG Total	198,628	198,628	55	12,917	2,525	151,782	12,112	163,894	95	163,989
	198,628	198,628								163,989

* Adjusted for customer growth

MINNESOTA ENERGY RESOURCES - NNG

DESIGN-DAY DEMAND PER CUSTOMER - GS NOVEMBER 1, 2018

NNG

<u>Heating Season</u>	<u>No. of Firm Customers</u>	<u>Design Day Requirements</u>	<u>MMBtu /Customer /Day</u>
18/19	198,628	273,842	1.38
17/18	197,991	267,783	1.35
16/17	195,311	262,324	1.34
15/16	192,016	259,076	1.35
14/15	189,078	273,917	1.45
13/14	189,254	258,913	1.37
12/13	187,545	239,325	1.28
11/12	185,890	247,982	1.33
10/11	186,610	234,907	1.26
09/10	185,811	244,601	1.32

MINNESOTA ENERGY RESOURCES - NNG

SUMMER/WINTER USAGE - Dth
PROJECTED 12 MONTHS ENDING JUNE 2019
NNG

<u>Class</u>	<u>Summer Apr-Oct</u>	<u>Winter Nov-Mar</u>	<u>Total</u>
GS	6,779,082	17,713,972	24,493,054
SVI	492,582	1,206,754	1,699,336
SVJ	5,099	7,020	12,119
LVI	494,146	627,088	1,121,234
LVJ	765	1,625	2,390
SLV			0
Total	<u>7,771,674</u>	<u>19,556,459</u>	<u>27,328,133</u>

**Attachment 3
NNG**

MINNESOTA ENERGY RESOURCES - NNG

ENTITLEMENT LEVELS

PROPOSED TO BE EFFECTIVE NOVEMBER 1, 2018

Capacity Type	Summer			April/October			Winter		
	2017/18 MMBtu	Change MMBtu	Proposed MMBtu	2017/18 MMBtu	Change MMBtu	Proposed MMBtu	2017/18 MMBtu	Change MMBtu	Proposed MMBtu
TF-12 Base & Variable	84,709	0	84,709	84,709	0	84,709	84,709	0	84,709
TF5	0	0	0	0	0	0	36,275	0	36,275
TFX - 12	32,297	15,939	48,236	32,297	15,939	48,236	32,297	15,939	48,236
TFX - 5	0	0	0	0	0	0	109,501	(5,000)	104,501
TFX- (Apr/Oct) Offpeak*	0	0	0	2,000	0	2,000	0	0	0
Bison	50,000	0	50,000	50,000	0	50,000	50,000	0	50,000
NBPL	50,000	0	50,000	50,000	0	50,000	50,000	0	50,000
Northwest Gas (Windom)	2,500	0	2,500	2,500	0	2,500	2,500	0	2,500
Northwestern Energy (Ortonville)	1,035	0	1,035	1,035	0	1,035	1,035	0	1,035
NNG Zone Delivery Call Option	0	0	0	0	0	0	0	0	0
Total	120,541	15,939	136,480	122,541	15,939	138,480	266,317	10,939	277,256
Heating Season Forecasted Design Day-Adjusted							267,783	6,059	273,842
Non-Heating Season Forecasted Design Day				162,282	1,707	163,989			
Heating Season Capacity Surplus/Shortage							(1,466)	4,880	3,414
Non-Heating Season Capacity Surplus/Shortage				(39,741)	14,232	(25,509)			
*Not included in Heating Season Total entitlement									
Reserve Margin			N3	-24.49%	8.93%	-15.56%	-0.55%	1.79%	1.25%

MINNESOTA ENERGY RESOURCES - NNG
RATE IMPACT OF THE PROPOSED DEMAND CHANGE
NOVEMBER 1, 2018

All costs in \$/Dth	Base Cost of Gas G011/MR-17-564 Jan 1, 2018	Demand Charge Oct 1, 2017	Demand Charge Demand Filing Nov 1, 2017	Most Recent PGA Jul 1, 2018	Proposed Effective Nov 1, 2018	Result of Proposed Change			
						Change from Last Rate Case	Change from Nov 1, 2017 Demand Filing	Change from Last PGA %	Change from Last PGA \$

1) General Service Residential: Avg. Annual Use:		88	Dth						
Commodity Cost	\$3.7406	\$3.2257	\$3.0201	\$3.5848	\$3.7406	\$0.0000	\$0.7205	4.35%	\$0.1558
Demand Cost	\$0.9361	\$0.9288	\$0.9328	\$0.6797	\$1.1467	\$0.2106	\$0.2139	68.71%	\$0.4670
Commodity Margin	\$2.6284	\$2.4116	\$2.4116	\$2.5727	\$2.5727	(\$0.0557)	\$0.1611	0.00%	\$0.0000
Total Cost of Gas	\$7.3051	\$6.5661	\$6.3645	\$6.8372	\$7.4600	\$0.1549	\$1.0955	9.11%	\$0.6228
Avg Annual Cost	\$642.85	\$577.82	\$560.08	\$601.67	\$656.48	\$13.63	\$96.41	9.11%	\$54.81
Effect of proposed commodity change on average annual bills:									\$13.71
Effect of proposed demand change on average annual bills:									\$41.10

2) Small Vol. Interruptible: Avg. Annual Use:		5,110	Dth						
Commodity Cost	\$3.7406	\$3.2257	\$3.0201	\$3.5848	\$3.7406	\$0.0000	\$0.7205	4.35%	\$0.1558
Demand Cost									
Commodity Margin	\$1.0616	\$0.9740	\$0.9740	\$1.0391	\$1.0391	(\$0.0225)	\$0.0651	0.00%	\$0.0000
Total Cost of Gas	\$4.8022	\$4.1997	\$3.9941	\$4.6239	\$4.7797	(\$0.0225)	\$0.7856	3.37%	\$0.1558
Avg Annual Cost	\$24,539.24	\$21,460.47	\$20,409.85	\$23,628.13	\$24,424.27	(\$114.97)	\$4,014.42	3.37%	\$796.14
Effect of proposed commodity change on average annual bills:									\$796.14
Effect of proposed demand change on average annual bills:									\$0.00

3) Large Vol. Interruptible: Avg. Annual Use:		16,150	Dth						
Commodity Cost	\$3.7406	\$3.2257	\$3.0201	\$3.5848	\$3.7406	\$0.0000	\$0.7205	4.35%	\$0.1558
Demand Cost									
Commodity Margin	\$0.5808	\$0.5329	\$0.5329	\$0.5685	\$0.5685	(\$0.0123)	\$0.0356	0.00%	\$0.0000
Total Cost of Gas	\$4.3214	\$3.7586	\$3.5530	\$4.1533	\$4.3091	(\$0.0123)	\$0.7561	3.75%	\$0.1558
Avg Annual Cost	\$69,790.61	\$60,701.39	\$57,380.95	\$67,075.80	\$69,591.97	(\$198.65)	\$12,211.02	3.75%	\$2,516.17
Effect of proposed commodity change on average annual bills:									\$2,516.17
Effect of proposed demand change on average annual bills:									\$0.00

4) Small Vol. Firm: Avg. Annual Use:		5,110	Dth						
		25	Dth						
Commodity Cost	\$3.7406	\$3.2257	\$3.0201	\$3.5848	\$3.7406	\$0.0000	\$0.7205	4.35%	\$0.1558
Demand Cost	\$28.0830	\$27.8640	\$27.9840	\$2.8083	\$34.4019	\$0.0000	\$6.4179	1125.01%	\$31.5936
Commodity Margin	\$1.0616	\$0.9740	\$0.9740	\$1.0391	\$1.0391	(\$0.0225)	\$0.0651	0.00%	\$0.0000
Demand Margin	\$3.2697	\$3.0000	\$3.0000	\$3.2004	\$3.2004	\$3.2004	\$0.2004	0.00%	\$0.0000
Total Cost of Gas	\$4.8022	\$4.1997	\$3.9941	\$4.6239	\$4.7797	(\$0.0225)	\$0.7856	3.37%	\$0.1558
Total Demand Cost	\$31.3527	\$30.8640	\$30.9840	\$6.0087	\$37.6023	\$6.2496	\$6.6183	525.80%	\$31.5936
Avg Annual Cost	\$25,323.06	\$22,232.07	\$21,184.45	\$23,778.35	\$25,364.32	\$41.26	\$4,179.87	6.67%	\$1,585.98
Effect of proposed commodity change on average annual bills:									\$796.14
Effect of proposed demand change on average annual bills:									\$789.84

5) Large Vol. Firm: Avg. Annual Use:		16,150	Dth						
		75	Dth						
Commodity Cost	\$3.7406	\$3.2257	\$3.0201	\$3.5848	\$3.7406	\$0.0000	\$0.7205	4.35%	\$0.1558
Demand Cost	\$28.0830	\$27.8640	\$27.9840	\$2.8083	\$34.4019	\$6.3189	\$6.4179	1125.01%	\$31.5936
Commodity Margin	\$0.5808	\$0.5329	\$0.5329	\$0.5685	\$0.5685	(\$0.0123)	\$0.0356	0.00%	\$0.0000
Demand Margin	\$3.2697	\$3.0000	\$3.0000	\$3.2004	\$3.2004	\$0.0000	\$0.2004	0.00%	\$0.0000
Total Cost of Gas	\$4.3214	\$3.7586	\$3.5530	\$4.1533	\$4.3091	(\$0.0123)	\$0.7561	3.75%	\$0.1558
Total Demand Cost	\$31.3527	\$30.8640	\$30.9840	\$6.0087	\$37.6023	\$37.6023	\$6.6183	525.80%	\$31.5936
Avg Annual Cost	\$72,142.06	\$63,016.19	\$59,704.75	\$67,526.45	\$72,412.13	\$2,621.52	\$12,707.38	7.24%	\$4,885.69
Effect of proposed commodity change on average annual bills:									\$2,516.17
Effect of proposed demand change on average annual bills:									\$2,369.52

Note: Average Annual Average based on NNG Annual Automatic Adjustment Report in Docket No. E, G999/AA-17-493
Note: Commodity Cost Rates do not include ACA adjustment.

Attachment 4
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MINNESOTA ENERGY RESOURCES - NNG
RATE IMPACT OF THE PROPOSED DEMAND CHANGE

NOVEMBER 1, 2018

NNG						
IV. NORTHERN NATURAL GAS COMPANY'S RATES -- CURRENT COST OF GAS EFFECTIVE						
		Tariff-Summer(7 mths)	Tariff-Winter(5 mths)	Wt. Annual	GRI	01-Nov-18 Total
TF-12B	112495	\$ 5.6830	\$ 10.2300	\$7.5776	\$0.0000	\$7.5776
TF-12B Discount	112495	\$ 5.6830	\$ 10.0320	\$7.4951	\$0.0000	\$7.4951
TF-12V	112495	\$ 5.6830	\$ 13.8660	\$9.0926	\$0.0000	\$9.0926
TF-5	112495	-	\$ 15.1530	\$15.1530	\$0.0000	\$15.1530
TFX	112486	\$ 5.6830	\$ 15.1530	\$9.6288	\$0.0000	\$9.6288
TFX-5	112486	-	\$ 15.1530	\$15.1530	\$0.0000	\$15.1530
TFX-5 Discount	112486	-	\$ 10.0320	\$10.0320	\$0.0000	\$10.0320
TFX Rochester	112486	\$ 37.1175	\$ 37.1175	\$37.1175	\$0.0000	\$37.1175
TFX - Discount	111866	\$ 2.2192	\$ 15.1392	\$7.6025	\$0.0000	\$7.6025
TFX - Discount	111866	\$ 4.8640	\$ 4.8640	\$4.8640	\$0.0000	\$4.8640
TFX - Discount	111866	\$ 5.4720	\$ 5.4720	\$5.4720	\$0.0000	\$5.4720
TFX-5	127852	-	\$ 15.1530	\$15.1530	\$0.0000	\$15.1530
Gas Cost						\$2.9695 /Dth
V. ANNUAL SALES -- As approved in Docket No. G011/MR-17-564						264,337,861
VI. MERC-NNG'S CURRENT COST OF GAS EFFECTIVE:						
01-Nov-18						
		Contract #	Monthly Entitlements (Dth)	Months	Rate (\$/Dth)	Contract Costs Rate/Therm
A. GS-NNG						
TF12B (Max Rate) Winter	112495	46,506	5	\$ 10.2300	=	\$2,378,782 \$ 0.01004
TF12B (Max Rate) Summer	112495	46,506	7	\$ 5.6830	=	\$1,850,055 \$ 0.00781
TF12V (Max Rate)	112495	33,003	12	\$ 9.0926	=	\$3,600,997 \$ 0.01520
TF5 (Max Rate)	112495	36,275	5	\$ 15.1530	=	\$2,748,375 \$ 0.01160
TF12B (Discount-Winter)	112495	5,200	12	\$ 7.4951	=	\$467,694 \$ 0.00197
TFX12 (Max Rate)	112486	16,261	12	\$ 9.6288	=	\$1,878,887 \$ 0.00793
TFX Apr (Max Rate)	112486	2,000	1	\$ 5.6830	=	\$11,366 \$ 0.00005
TFX Oct (Max Rate)	112486	2,000	1	\$ 5.6830	=	\$11,366 \$ 0.00005
TFX5 (Max Rate)	112486	77,688	5	\$ 15.1530	=	\$5,886,031 \$ 0.02485
TFX5 (Discount)	112486	1,800	5	\$ 10.0320	=	\$90,288 \$ 0.00038
TFX12 (Rochester)	112486	10,500	12	\$ 37.1175	=	\$4,676,805 \$ 0.01974
TFX12 (Discount)	111866	1,283	12	\$ 4.8640	=	\$74,886 \$ 0.00032
TFX12 (Discount)	111866	8,271	12	\$ 5.4720	=	\$543,107 \$ 0.00229
TFX12 (Discount)	111866	11,921	12	\$ 7.6025	=	\$1,087,553 \$ 0.00459
TFX5 (Discount)	111866	379	5	\$ 4.8640	=	\$9,217 \$ 0.00004
TFX5 (Discount)	111866	2,445	5	\$ 5.4720	=	\$66,895 \$ 0.00028
TFX5 (Discount)	111866	22,189	5	\$ 15.1392	=	\$1,679,619 \$ 0.00709
Windom		2,500	12	-	=	\$0 \$ -
Northwestern Energy		1,035	12	\$ 8.3382	=	\$103,560 \$ 0.00044
Total Demand Cost						\$27,165,484 \$ 0.11467
As proposed in Docket No. G011/MR-17-564						236,895,506
GS-1 Demand Current Cost of Gas/therm						\$ 0.11467
GS-1 Commodity Current Cost of Gas/therm						\$ 0.37406
Total GS-1 Current Cost of Gas/therm						\$ 0.48873
B. GS-NNG, SVI-NNG, LVI-NNG, SJ-NNG, LJ-NNG, SLV-Commodity						
		Contract #	Monthly Entitlement (Dth)	Months	Rate (\$/Dth)	Contract Costs Rate (\$/therm)
FDD - Reservation	118657	81,508	12	\$ 1.7140	=	\$1,676,457 \$ 0.00634
FDD - Storage Cycle	118657	939,864	5	\$ 0.3567	=	\$1,676,248 \$ 0.00634
FDD - Reservation	118657	5,550	12	\$ 3.3157	=	\$220,826 \$ 0.00084
FDD - Storage Cycle	118657	64,000	5	\$ 0.6901	=	\$220,832 \$ 0.00084
FDD - Reservation	133736	17,345	12	\$ 1.7140	=	\$356,752 \$ 0.00135
FDD - Storage Cycle	133736	200,000	5	\$ 0.3567	=	\$356,700 \$ 0.00135
FDD - Reservation	132024*	8,672	12	\$ 1.7140	=	\$178,366 \$ 0.00067
FDD - Storage Cycle	132024*	100,000	5	\$ 0.3567	=	\$178,350 \$ 0.00067
Firm Deferred Delivery Storage Contracts						\$4,864,530 \$ 0.01840
Per Docket No. G-007/M-07-1402-05 dated August 6, 2014, storage demand charges will be allocated through the commodity charge effective 11/1/2014.						
		Contract #	Monthly Entitlement (Dth)	Months	Rate (\$/Dth)	Contract Costs Rate (\$/therm)
Bison	FT0003	50,000	12	\$ 17.4896	=	\$10,493,750 \$ 0.03970
NBPL	T8673F	50,000	12	\$ 6.9958	=	\$4,197,500 \$ 0.01588
Per Doct No. G-007/M-10-1166 and G-011/M-10-1168 dated January 26, 2015, recover the costs associated with Bison contract through commodity effective						\$14,691,250 \$ 0.05558
		Annual Sales (Dth)	Rate (\$/Dth)	Commodity Cost	Rate Case Sales (therm)	Rate (\$/therm)
CD-1 Commodity		26,433,786	x	\$2.9695	\$78,495,128	264,337,861 \$ 0.29695
SMS-Bal Service		272,160	x	\$2.1800	\$593,309	264,337,861 \$ 0.00224
Physical Forward Start Premium				\$53,820	264,337,861	\$ 0.00020
Call Option Premium				\$181,736	264,337,861	\$ 0.00069
GS-NNG, SVI-NNG, LVI-NNG, SJ-NNG, LJ-NNG, SLV Commodity Current Cost of Gas/therm						\$84,188,522 264,337,861 \$ 0.37406
*Contract 132024 was transposed with contract 132112 in the 2017-2018 Demand Entitlement Filing (no impact to volumes or dollars in total)						

Attachment 5

MINNESOTA ENERGY RESOURCES - NNG

**Financial Options
Heating Season 2018-2019**

Units - Gas Daily Peaker Packages (Physical)

November		December		January		February		March		Daily Total	Term Total
Contract	Daily	Contract	Daily	Contract	Daily	Contract	Daily	Contract	Daily		
Date	Volume	Date	Volume	Date	Volume	Date	Volume	Date	Volume		
N/A		N/A		N/A		N/A		N/A			

Premium - Gas Daily Peaker (Monthly Cost)

November		December		January		February		March		Total	
Option	Premium	Option	Premium	Option	Premium	Option	Premium	Option	Premium	Option	Premium
Premium	Cost	Premium	Cost	Premium	Cost	Premium	Cost	Premium	Cost	Premium	Cost
N/A		N/A		N/A		N/A		N/A		N/A	

Units - Futures (Dth)

	November		December		January		February		March		Term Total
	Contract Date	Daily Volume	Contract Date	Daily Volume	Contract Date	Daily Volume	Contract Date	Daily Volume	Contract Date	Daily Volume	
1	05/03/18	1,406	05/15/18	2,667	05/17/18	2,998	05/08/18	2,700	05/10/18	532	309,397
2	05/03/18	281	06/12/18	2,401	06/13/18	2,725	06/07/18	2,400	05/10/18	1,597	284,310
3	06/05/18	1,688	07/17/18	2,401	01/00/00	-	06/07/18	300	06/11/18	1,863	192,328
4	07/05/18	1,688	01/00/00	-	01/00/00	-	07/10/18	2,400	07/12/18	1,863	175,603
5	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	-
6	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	-
7									01/00/00	-	-
8											
Total		5,063		7,469		5,723		7,800		5,855	961,638

Units - Call Options (Dth)

	November		December		January		February		March		Term Total
	Contract Date	Daily Volume	Contract Date	Daily Volume	Contract Date	Daily Volume	Contract Date	Daily Volume	Contract Date	Daily Volume	
1	05/03/18	3,046	05/10/18	4,801	05/08/18	2,972	05/15/18	5,357	05/17/18	3,726	597,868
2	06/05/18	3,046	06/11/18	4,801	05/17/18	2,702	06/12/18	5,060	06/13/18	3,726	581,158
3	07/05/18	3,046	07/12/18	4,535	06/07/18	5,404	07/17/18	5,060	01/00/00	-	541,150
4	01/00/00	-	01/00/00	-	07/10/18	5,134	01/00/00	-	01/00/00	-	159,145
5	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	-
6	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	01/00/00	-	-
7											
8											
Total		9,138		14,138		16,212		15,476		7,452	1,879,321

Premium - Call Option (Monthly Cost)

	November		December		January		February		March		Total	
	Option Premium	Premium Cost	Option Premium	Premium Cost	Option Premium	Premium Cost	Option Premium	Premium Cost	Option Premium	Premium Cost	Option Premium	Premium Cost
1	\$ 0.0950	\$ 8,682	\$ 0.0900	\$ 13,396	\$ 0.0950	\$ 8,753	\$ 0.0930	\$ 13,950	\$ 0.0980	\$ 11,319	\$ 0.0938	\$ 56,100
2	\$ 0.1000	\$ 9,138	\$ 0.1000	\$ 14,885	\$ 0.0980	\$ 8,209	\$ 0.0970	\$ 13,742	\$ 0.1000	\$ 11,550	\$ 0.0990	\$ 57,523
3	\$ 0.1000	\$ 9,138	\$ 0.0970	\$ 13,636	\$ 0.0990	\$ 16,585	\$ 0.0940	\$ 13,317	\$ -	\$ -	\$ 0.0973	\$ 52,676
4	\$ -	\$ -	\$ -	\$ -	\$ 0.0970	\$ 15,437	\$ -	\$ -	\$ -	\$ -	\$ 0.0970	\$ 15,437
5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	#DIV/0!	\$ -
6	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	#DIV/0!	\$ -
7	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
8	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 0.0983	\$ 26,958	\$ 0.0956	\$ 41,917	\$ 0.0975	\$ 48,983	\$ 0.0946	\$ 41,008	\$ 0.0990	\$ 22,869	\$ 0.0967	\$ 181,736

Units - Collar Floor (put)

No Puts were purchased.

Attachment 6

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18/19 Winter Portfolio Plan - NNG MERC Hedging Plan

10,000 Contract Size														
System	Purchase Month	Contracts		Contracts		Contracts		Contracts		Contracts		Total		Percent of Requirements
		Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	Number Contracts	Contract Volume	
MN Requirements			2,729,521		4,302,043		4,900,437		4,277,234		3,347,223		19,556,458	19,556,458
Daily Average			90,984		138,776		158,079		152,758		107,975		129,513	
10%	Futures		272,952		430,204		490,044		427,723		334,722		1,955,646	
20%	Call		545,904		860,409		980,087		855,447		669,445		3,911,292	
30%	Storage		818,856		1,290,613		1,470,131		1,283,170		1,004,167		5,866,937	
40%	Index		1,091,808		1,720,817		1,960,175		1,710,894		1,338,889		7,822,583	
Futures														
Contracts	May-18	5	50,000	8	80,000	9	90,000	7	70,000	6	60,000	35	350,000	
	Jun-18	5	50,000	7	70,000	8	80,000	7	70,000	6	60,000	33	330,000	
	Jul-18	5	50,000	7	70,000	8	80,000	7	70,000	6	60,000	33	330,000	
	Aug-18	4	40,000	7	70,000	8	80,000	7	70,000	5	50,000	31	310,000	
	Sep-18	4	40,000	7	70,000	8	80,000	7	70,000	5	50,000	31	310,000	
	Oct-18	4	40,000	7	70,000	8	80,000	7	70,000	5	50,000	31	310,000	
	Total	27	270,000	43	430,000	49	490,000	42	420,000	33	330,000	194	1,940,000	9.92%
Call Options	May-18	9	90,000	15	150,000	17	170,000	15	150,000	11	110,000	67	670,000	
	Jun-18	9	90,000	15	150,000	17	170,000	14	140,000	11	110,000	66	660,000	
	Jul-18	9	90,000	14	140,000	16	160,000	14	140,000	11	110,000	64	640,000	
	Aug-18	9	90,000	14	140,000	16	160,000	14	140,000	11	110,000	64	640,000	
	Sep-18	9	90,000	14	140,000	16	160,000	14	140,000	11	110,000	64	640,000	
	Oct-18	9	90,000	14	140,000	16	160,000	14	140,000	11	110,000	64	640,000	
	Total	54	540,000	86	860,000	98	980,000	85	850,000	66	660,000	389	3,890,000	19.89%
Collars	May-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Jun-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Jul-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Aug-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Sep-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Oct-18	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	0	0	0	0	0	0	0	0	0	0	0	0	0.00%
Index (back financial)														
	Total		810,000		1,290,000		1,470,000		1,270,000		990,000		5,830,000	29.81%
Physical Hedges			0		0		0		0		0		0	
Storage			635,634		1,597,234		1,597,234		1,597,234		635,634		6,062,969	31.00%
Prepaid Obl			0		0		0		0		0		0	0.00%
			53%		67%		63%		67%		49%		61%	60.81%
Term Index		0	0	0	0	0	0	0	0	0	0	0	0	0.00%
		0	0	0	0	0	0	0	0	0	0	0	0	0.00%
Total NNG MN														
Futures													1,940,000	9.92%
Call Options													3,890,000	19.89%
Costing Collar													0	0.00%
Storage													6,062,969	31.00%
Prepaid Obl													0	0.00%
Term Index													0	0.00%
Month/Daily													7,663,489	39.19%
Total													19,556,458	100.00%

MINNESOTA ENERGY RESOURCES

**NNG WINTER PLAN
NOVEMBER 2018 THROUGH MARCH 2019**

<u>PHYSICAL FIXED PRICE HEDGES</u>	<u>Deal #</u>	<u>Trigger Locked</u>	<u>Trigger Exercised</u>	<u>Receipt Point</u>	<u>Nov</u>	<u>Dec</u>	<u>Daily Volumes Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Monthly Total</u>
No Physical Fixed Price Hedges										-
Total Actual Fixed/Option Physical					-	-	-	-	-	-

INDEX

<u>Contract Number</u>	<u>Date</u>	<u>Receipt Point</u>	<u>Nov</u>	<u>Dec</u>	<u>Jan</u>	<u>Feb</u>	<u>Mar</u>	<u>Total</u>
64133	4/24/2018	NBPL Port of Morgan	25,000	25,000	25,000	25,000	25,000	3,775,000
64143	4/24/2018	NBPL Port of Morgan	15,000	15,000	15,000	15,000	15,000	2,265,000
64178	4/24/2018	NBPL Port of Morgan		10,000	10,000	10,000		900,000
64175	4/24/2018	NNG/GLGT Carlton	3,012	3,012	3,012	3,012	3,012	454,812
64174	4/24/2018	NNG/GLGT Grand Rapids	6,064	6,064	6,064	6,064	6,064	915,664
64175	4/24/2018	NNG Demarc		5,000	5,000	5,000		450,000
64138	4/24/2018	NNG Ventura		15,000	15,000	15,000		1,350,000
64136	4/24/2018	NNG/GLGT Carlton	10,000	10,000	10,000	10,000	10,000	1,510,000
64134	4/24/2018	NNG Ventura	5,000	5,000	5,000	5,000	5,000	755,000
Total Actual Seasonal Index			64,076	94,076	94,076	94,076	64,076	12,375,476

GAS DAILY PACKAGES

Physical Call Option	64139	4/24/2018	NNG Ventura	10,000	10,000	10,000	10,000	10,000
Physical Call Option	64140	4/24/2018	NNG Ventura		10,000	10,000	10,000	
Physical Call Option	64141	4/24/2018	NNG Ventura	10,000	10,000	10,000	10,000	10,000
Physical Call Option	64142	4/24/2018	NNG Ventura		10,000	10,000	10,000	

STORAGE

<u>Injection Month</u>	<u>K#118657 Volume Injected</u>	<u>K#132024 Volume Injected</u>	<u>K#133736 Volume Injected</u>	<u>Total Volume Injected</u>
May - balance forward	0	0	0	0
June	984,181	98,039	196,078	1,278,298
July	1,016,987	101,307	202,614	1,320,908
August	1,016,987	101,307	202,614	1,320,908
Sept	984,181	98,039	196,078	1,278,298
Oct (est)	1,016,987	101,307	202,614	1,320,908
Total	5,019,321	500,000	1,000,000	6,519,321

MINNESOTA ENERGY RESOURCES - NNG

	2014-2015 NNG GS	2015-2016 NNG GS	2016-2017 NNG GS	2017-2018 NNG GS	2018-2019 NNG GS	Proposed Change
Design Day	261,002	259,076	262,324	267,783	273,842	6,059
Customer Requirements moving to Transportation						
Adjusted Design Day						
Design Day Percentages	28.07%	32.40%	29.71%	30.43%	28.70%	-1.73%
Total Design Day Capacity (includes non-recallable capacity)	266,385	266,317	266,317	266,317	277,256	10,939
Less: Windom	2,500	2,500	2,500	2,500	2,500	0
Less: Northwestern Energy	910	1,035	1,035	1,035	1,035	0
Total Design Day Capacity NNG Pipeline	262,975	262,782	262,782	262,782	273,721	10,939
Factors for All Winter Capacity	100.00%	100.00%	100.00%	100.00%	100.00%	
<u>Direct Assigned Entitlements in PGA</u>						
TF12B	55,019	48,183	48,183	54,419	51,706	(2,713)
TF12V	21,060	36,526	36,526	30,290	33,003	2,713
TF5	31,515	36,275	36,275	36,275	36,275	0
TFX12	32,297	32,297	32,297	32,297	48,236	15,939
TFX(5)	123,084	109,501	109,501	109,501	104,501	(5,000)
TFX(5) (12-V)						0
TFX (April Only)	2,000	2,000	2,000	2,000	2,000	0
TFX (October Only)	2,000	2,000	2,000	2,000	2,000	0
Windom	2,500	2,500	2,500	2,500	2,500	0
Northwestern Energy	910	1,035	1,035	1,035	1,035	0
NNG Zone Delivery Call Option	0	0	0	0	0	0
Bison *	50,000	50,000	50,000	50,000	50,000	0
NBPL *	50,000	50,000	50,000	50,000	50,000	0
Total Direct Assignments	266,385	266,317	266,317	266,317	277,256	10,939
LP Peak Shaving						0
Total Design Day Capacity	266,385	266,317	266,317	266,317	277,256	10,939
Total Annual Transportation	111,786	120,541	120,541	120,541	136,480	15,939
Total Seasonal Transportation	154,599	145,776	145,776	145,776	140,776	(5,000)
Total Percent Seasonal	58.0%	54.7%	54.7%	54.7%	50.8%	-4.0%
Reserve Margin	2.06%	2.79%	1.52%	-0.55%	1.25%	1.8%
Total Design Day Capacity w/ contract demand	266,385	266,317	266,317	266,317	277,256	10,939
Factors	28.07%	32.40%	29.71%	30.43%	28.70%	-1.73%
<u>Other Entitlements not included in Peak Day Deliverability</u>						
TFX Oct	2,000	2,000	2,000	2,000	2,000	0
TFX Apr	2,000	2,000	2,000	2,000	2,000	0
FDD Storage Reservation	94,863	100,934	107,871	113,075	113,075	0
FDD Storage Capacity	1,093,864	1,163,864	1,163,864	1,303,864	1,303,864	0
FDD Maximum Storage Quantity	5,469,321	5,819,321	6,219,321	6,519,321	6,519,321	0
SMS	22,680	24,380	24,380	22,680	22,680	0

Attachment 8

MINNESOTA ENERGY RESOURCES - NNG

Change in Costs due to November 1, 2018 Change in Entitlement Levels and Related Demand Costs

Costs Assigned In Demand	Contract	2017/18 Entitlements	2018/19 Entitlements	Entitlement Change	Months	2018/19 Rate	2017/18 Total Annual Cost	2018/19 Total Annual Cost	Total Annual Cost Change
TF12B (Max Rate) Winter	112495	49,219	46,506	(2,713)	5	\$10.2300	\$2,517,552	\$2,378,782	(\$138,770)
TF12B (Max Rate) Summer	112495	49,219	46,506	(2,713)	7	\$5.6830	\$1,957,981	\$1,850,055	(\$107,926)
TF12V (Max Rate)	112495	30,290	33,003	2,713	12	\$9.0926	\$3,304,978	\$3,600,997	\$296,019
TF5 (Max Rate)	112495	36,275	36,275	0	5	\$15.1530	\$2,748,375	\$2,748,375	\$0
TF12B (Discount-Winter)	112495	5,200	5,200	0	12	\$7.4951	\$467,694	\$467,694	\$0
TFX12 (Max Rate)	112486	10,822	16,261	5,439	12	\$9.6288	\$1,250,434	\$1,878,887	\$628,453
TFX Apr (Max Rate)	112486	2,000	2,000	0	1	\$5.6830	\$11,366	\$11,366	\$0
TFX Oct (Max Rate)	112486	2,000	2,000	0	1	\$5.6830	\$11,366	\$11,366	\$0
TFX5 (Max Rate)	112486	82,688	77,688	(5,000)	5	\$15.1530	\$6,264,856	\$5,886,031	(\$378,825)
TFX5 (Discount)	112486	1,800	1,800	0	5	\$10.0320	\$90,288	\$90,288	\$0
TFX12 (Rochester)	112486	0	10,500	10,500	12	\$37.1175	\$0	\$4,676,805	\$4,676,805
TFX12 (Discount)	111866	1,283	1,283	0	12	\$4.8640	\$74,886	\$74,886	\$0
TFX12 (Discount)	111866	8,271	8,271	0	12	\$5.4720	\$543,107	\$543,107	\$0
TFX12 (Discount)	111866	11,921	11,921	0	12	\$7.6025	\$1,087,553	\$1,087,553	\$0
TFX5 (Discount)	111866	379	379	0	5	\$4.8640	\$9,217	\$9,217	\$0
TFX5 (Discount)	111866	2,445	2,445	0	5	\$5.4720	\$66,895	\$66,895	\$0
TFX5 (Discount)	111866	22,189	22,189	0	5	\$15.1392	\$1,679,619	\$1,679,619	\$0
Windom		2,500	2,500	0	12	\$0.0000	\$0	\$0	\$0
Northwestern Energy		1,035	1,035	0	12	\$8.3382	\$103,560	\$103,560	\$0
Total Demand Cost							\$22,189,728	\$27,165,484	\$4,975,755

Costs Assigned In Commodity		2017/18 Entitlements	2018/19 Entitlement	Entitlement Change	Months	2018/19 Rate/Dth	2017/18 Total Annual Cost	Entitlement Total Cost	Entitlement Change
<u>Upstream</u>									
<u>Surcharges:</u>									
<u>Storage (FDD)</u>									
FDD - Reservation	118657	81,508	81,508	0	12	\$ 1.7140	\$1,676,457	\$1,676,457	\$0
FDD - Storage Cycle	118657	939,864	939,864	0	5	\$ 0.3567	\$1,676,248	\$1,676,248	\$0
FDD - Reservation	118657	5,550	5,550	0	12	\$ 3.3157	\$220,826	\$220,826	\$0
FDD - Storage Cycle	118657	64,000	64,000	0	5	\$ 0.6901	\$220,832	\$220,832	\$0
FDD - Reservation	133736	17,345	17,345	0	12	\$ 1.7140	\$356,748	\$356,752	\$4
FDD - Storage Cycle	133736	200,000	200,000	0	5	\$ 0.3567	\$356,700	\$356,700	\$0
FDD - Reservation	132024*	8,672	8,672	0	12	\$ 1.7140	\$178,374	\$178,366	(\$8)
FDD - Storage Cycle	132024*	100,000	100,000	0	5	\$ 0.3567	\$178,350	\$178,350	\$0
<u>Pipeline</u>									
Bison	FT0003	50,000	50,000	0	12	\$17.4896	\$10,493,750	\$10,493,750	\$0
NBPL	T8673F	50,000	50,000	0	12	\$6.9958	\$4,197,500	\$4,197,500	\$0
SMS-Bal Service		272,160	272,160	0	1	\$2.1800	\$593,309	\$593,309	\$0
Physical Forward Start Premium							\$53,820	\$128,700	\$74,880
Financial Call Option Premium							\$713,379	\$181,736	(\$531,643)
Total Commodity Costs							\$20,916,292	\$20,459,524	(\$456,767)

*Contract 132024 was transposed with contract 132112 in the 2017-2018 Demand Entitlement Nng (no impact to volumes or dollars in total)

Attachment 9

MINNESOTA ENERGY RESOURCES - NNG

Daily Total Throughput Data - July 1, 2017 through June 30, 2018
NNG

Design Day:

Base	12,917
Variable	2,525

Date	13.98% Cloquet Adjusted HDD	29.22% Minneapolis Adjusted HDD	45.15% Rochester Adjusted HDD	11.65% Worthington Adjusted HDD	100.00% Weighted Adjusted HDD	Actual Total Through- Put *	Estimated Firm Through- Put **
7/1/17	4	0	0	0	1	134,314	14,400
7/2/17	5	0	0	0	1	134,736	14,541
7/3/17	2	0	0	0	0	143,865	13,482
7/4/17	0	0	0	0	0	136,745	12,917
7/5/17	0	0	0	0	0	182,646	12,917
7/6/17	0	0	0	0	0	175,415	12,917
7/7/17	4	0	0	0	1	154,460	14,223
7/8/17	0	0	0	0	0	143,068	12,917
7/9/17	2	0	0	0	0	145,872	13,658
7/10/17	0	0	0	0	0	172,886	12,917
7/11/17	0	0	0	0	0	167,683	12,917
7/12/17	11	0	0	0	2	162,048	16,906
7/13/17	11	0	2	4	3	160,010	19,756
7/14/17	0	0	2	0	1	160,071	14,741
7/15/17	0	0	0	0	0	148,767	12,917
7/16/17	8	0	0	0	1	138,265	15,564
7/17/17	0	0	0	0	0	173,479	12,917
7/18/17	2	0	0	0	0	186,847	13,482
7/19/17	0	0	0	0	0	186,200	12,917
7/20/17	0	0	0	0	0	179,568	12,917
7/21/17	0	0	0	0	0	163,926	12,917
7/22/17	1	0	0	0	0	146,884	13,093
7/23/17	5	0	0	0	1	141,276	14,753
7/24/17	0	0	0	0	0	163,000	12,917
7/25/17	0	0	0	0	0	164,315	12,917
7/26/17	0	0	0	0	0	175,732	12,917
7/27/17	0	0	0	0	0	178,086	12,917
7/28/17	0	0	0	0	0	164,295	12,917
7/29/17	0	0	0	0	0	138,490	12,917
7/30/17	0	0	0	0	0	150,876	12,917
7/31/17	0	0	0	0	0	167,940	12,917
8/1/17	0	0	0	0	0	162,901	12,917
8/2/17	5	0	0	0	1	161,682	14,823
8/3/17	14	10	8	10	10	146,758	37,227
8/4/17	4	0	4	2	3	139,813	19,922
8/5/17	5	0	0	2	1	133,498	15,011
8/6/17	6	0	3	2	2	135,656	18,476
8/7/17	0	0	N9	2	0	139,036	13,388

Minnesota Energy Resources Corporation
2018-2019 Demand Entilement
MERC-NNG
August 1, 2018

8/8/17	0	0	0	0	0	149,729	12,917
8/9/17	0	0	0	0	0	135,042	12,917
8/10/17	7	0	1	3	2	137,327	16,972
8/11/17	5	0	1	2	1	129,955	15,587
8/12/17	1	0	1	0	1	120,116	14,234
8/13/17	2	0	0	1	0	119,226	13,594
8/14/17	5	0	0	3	1	150,863	15,482
8/15/17	0	0	0	1	0	136,227	13,064
8/16/17	3	0	0	0	0	137,959	13,905
8/17/17	7	0	1	0	1	124,165	16,466
8/18/17	1	0	5	0	2	135,719	18,452
8/19/17	0	0	0	0	0	131,066	12,917
8/20/17	0	0	0	0	0	143,472	12,917
8/21/17	5	0	0	3	1	158,155	15,723
8/22/17	7	0	5	4	4	149,475	22,177
8/23/17	10	0	2	0	2	155,588	18,920
8/24/17	10	0	3	0	3	156,771	19,666
8/25/17	5	1	2	0	2	153,449	17,888
8/26/17	6	1	2	0	2	146,772	18,461
8/27/17	5	0	0	0	1	141,247	14,611
8/28/17	2	0	3	2	2	141,896	17,712
8/29/17	0	0	1	0	0	134,354	13,487
8/30/17	4	0	0	0	1	138,525	14,435
8/31/17	11	4	8	2	7	149,275	29,520
9/1/17	7	2	5	0	4	142,481	22,166
9/2/17	0	0	1	0	0	135,179	13,487
9/3/17	0	0	0	0	0	135,118	12,917
9/4/17	10	2	7	8	6	144,795	27,968
9/5/17	16	10	12	13	12	157,705	43,432
9/6/17	14	7	15	12	12	151,483	42,887
9/7/17	19	2	5	3	6	150,744	27,578
9/8/17	12	5	8	3	7	144,384	30,957
9/9/17	6	0	1	0	1	136,454	15,825
9/10/17	0	0	1	0	0	128,896	13,601
9/11/17	3	0	0	0	0	136,940	13,835
9/12/17	0	0	0	0	0	141,515	12,917
9/13/17	0	0	0	0	0	141,032	12,917
9/14/17	0	0	0	0	0	150,127	12,917
9/15/17	7	0	0	0	1	149,226	15,247
9/16/17	4	1	1	16	3	147,345	20,283
9/17/17	16	5	7	8	8	141,665	32,340
9/18/17	12	8	9	5	9	152,327	34,797
9/19/17	2	0	0	0	0	150,087	13,482
9/20/17	10	1	0	5	2	164,891	18,193
9/21/17	4	0	0	0	1	151,335	14,435
9/22/17	0	0	0	0	0	171,133	12,917
9/23/17	0	0	0	0	0	167,884	12,917
9/24/17	0	0	0	0	0	158,531	12,917
9/25/17	11	5	0	13	4	171,764	24,260
9/26/17	15	10	12	15	12	169,258	43,638

Minnesota Energy Resources Corporation
2018-2019 Demand Entilement
MERC-NNG
August 1, 2018

9/27/17	13	8	12	9	10	147,982	39,177
9/28/17	11	5	6	5	6	150,031	28,274
9/29/17	20	10	14	10	13	151,618	46,294
9/30/17	11	5	8	5	7	141,518	31,096
10/1/17	9	7	3	8	6	137,165	27,376
10/2/17	8	1	0	8	2	141,678	18,210
10/3/17	13	8	7	15	9	150,330	34,961
10/4/17	18	11	13	13	13	156,078	46,514
10/5/17	21	9	11	11	12	173,544	42,357
10/6/17	17	9	8	14	10	156,925	38,194
10/7/17	11	7	13	5	10	146,242	37,981
10/8/17	11	7	5	11	7	155,896	30,240
10/9/17	29	21	19	28	22	199,006	67,694
10/10/17	25	21	22	29	23	206,337	71,060
10/11/17	19	16	17	17	17	184,858	55,440
10/12/17	15	11	12	15	12	171,461	43,800
10/13/17	24	13	18	19	17	191,403	56,620
10/14/17	21	18	21	23	21	189,832	64,857
10/15/17	25	20	24	21	23	180,544	70,125
10/16/17	16	12	14	9	13	171,847	45,568
10/17/17	9	4	6	3	6	156,185	26,838
10/18/17	12	7	12	10	10	165,544	38,738
10/19/17	10	6	7	4	7	171,916	30,408
10/20/17	1	0	0	0	0	158,481	13,305
10/21/17	11	7	9	11	9	153,012	36,184
10/22/17	14	10	14	14	13	162,202	44,734
10/23/17	21	18	20	26	20	191,341	63,582
10/24/17	28	23	28	27	26	210,022	79,622
10/25/17	22	17	20	13	19	215,235	60,182
10/26/17	28	23	27	32	26	225,555	79,278
10/27/17	39	39	41	48	41	244,996	116,747
10/28/17	40	36	40	35	38	256,473	109,919
10/29/17	35	30	33	30	32	222,605	93,514
10/30/17	38	37	40	48	40	277,342	113,469
10/31/17	43	38	41	43	41	298,621	115,555
11/1/17	39	33	35	31	34	264,164	99,879
11/2/17	37	35	34	34	34	275,859	99,898
11/3/17	39	35	36	37	36	288,520	103,792
11/4/17	34	28	28	32	29	248,739	86,904
11/5/17	48	41	40	46	42	275,257	119,082
11/6/17	48	38	38	41	39	321,192	112,299
11/7/17	46	36	40	39	39	318,725	112,340
11/8/17	50	38	38	41	40	288,598	113,773
11/9/17	66	55	56	55	57	352,636	156,273
11/10/17	55	48	51	49	50	323,627	140,376
11/11/17	39	33	38	34	36	284,439	104,388
11/12/17	43	35	37	33	37	275,278	106,303
11/13/17	37	29	33	30	32	264,026	93,410
11/14/17	31	25	26	27	27	238,719	80,036
11/15/17	44	38	41	44	41	281,980	115,861

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11/16/17	41	36	40	40	39	278,512	111,522
11/17/17	39	32	34	31	34	253,880	97,980
11/18/17	53	43	45	46	45	276,428	127,694
11/19/17	46	36	41	31	39	268,800	110,871
11/20/17	42	33	33	39	35	261,438	101,823
11/21/17	53	49	52	53	51	305,673	142,186
11/22/17	50	42	45	45	45	289,285	126,046
11/23/17	38	27	31	26	30	222,077	89,775
11/24/17	36	21	22	24	24	218,874	72,268
11/25/17	44	34	37	30	36	247,108	104,495
11/26/17	30	25	26	20	26	225,667	77,628
11/27/17	25	17	22	17	20	203,493	63,808
11/28/17	40	29	35	32	33	233,907	97,198
11/29/17	40	31	33	31	33	235,905	96,884
11/30/17	33	29	33	28	31	232,637	91,985
12/1/17	34	26	28	29	28	226,491	84,445
12/2/17	32	28	30	25	29	227,440	86,704
12/3/17	30	22	24	25	24	202,363	74,060
12/4/17	45	33	32	41	35	232,775	102,094
12/5/17	60	55	58	52	57	315,473	155,629
12/6/17	62	58	58	62	59	323,825	162,591
12/7/17	55	53	58	59	56	311,169	154,377
12/8/17	54	45	47	51	48	283,474	133,611
12/9/17	53	46	51	46	49	284,555	136,799
12/10/17	49	40	45	34	43	270,275	120,468
12/11/17	57	51	54	50	53	299,162	146,724
12/12/17	58	49	51	44	50	290,554	140,305
12/13/17	53	48	54	44	51	303,048	141,243
12/14/17	55	48	53	43	51	306,742	140,662
12/15/17	54	40	41	34	42	268,491	118,599
12/16/17	48	43	39	36	41	262,642	116,032
12/17/17	45	40	40	39	41	268,180	115,834
12/18/17	39	32	38	33	36	256,586	102,893
12/19/17	56	43	41	39	43	274,462	122,456
12/20/17	59	50	48	46	50	304,445	138,790
12/21/17	53	48	49	60	50	301,395	140,400
12/22/17	55	50	57	58	55	306,400	151,506
12/23/17	54	51	59	59	56	307,332	154,196
12/24/17	70	60	66	68	65	321,936	177,026
12/25/17	88	78	80	82	81	377,648	217,336
12/26/17	85	74	82	83	80	417,607	214,741
12/27/17	78	70	75	76	74	398,760	199,631
12/28/17	77	65	67	65	68	369,431	183,937
12/29/17	84	80	80	83	81	385,963	216,739
12/30/17	91	84	86	91	86	412,689	230,896
12/31/17	89	82	88	93	87	407,925	232,723
1/1/18	79	75	83	89	81	400,088	217,377
1/2/18	70	71	75	72	73	367,495	196,362
1/3/18	79	70	75	75	74	378,230	199,797
1/4/18	79	72	75	71	74	396,770	200,754

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1/5/18	80	71	76	72	75	396,598	201,755
1/6/18	72	66	75	67	71	338,486	192,534
1/7/18	48	43	48	44	46	270,010	129,596
1/8/18	48	37	39	38	39	259,884	112,070
1/9/18	41	32	36	35	35	237,125	102,216
1/10/18	44	44	47	53	46	246,772	129,979
1/11/18	79	74	78	83	78	346,104	208,612
1/12/18	82	75	79	78	78	358,952	210,402
1/13/18	76	70	76	68	73	347,537	197,316
1/14/18	72	62	64	71	65	317,939	177,824
1/15/18	71	72	76	87	75	349,281	202,836
1/16/18	66	65	72	74	70	336,310	188,430
1/17/18	55	51	61	55	57	276,332	155,958
1/18/18	36	34	44	40	40	235,590	112,656
1/19/18	34	33	37	32	35	235,447	101,391
1/20/18	33	30	33	30	32	229,260	92,841
1/21/18	40	33	35	37	35	227,492	101,857
1/22/18	57	47	50	53	50	263,910	140,171
1/23/18	56	48	54	48	52	298,420	143,514
1/24/18	48	44	48	47	46	310,578	130,286
1/25/18	45	35	39	41	39	270,607	110,974
1/26/18	34	34	39	39	37	237,144	106,228
1/27/18	53	44	44	54	46	267,034	129,540
1/28/18	64	57	60	72	61	318,414	166,764
1/29/18	69	60	65	62	63	354,299	172,828
1/30/18	56	52	55	46	53	313,327	146,422
1/31/18	69	61	62	57	62	309,449	168,964
2/1/18	77	72	76	71	74	378,700	200,645
2/2/18	69	65	64	58	64	340,024	175,160
2/3/18	73	66	59	62	63	332,803	173,095
2/4/18	76	71	75	73	74	378,776	199,283
2/5/18	71	66	72	71	70	382,800	189,708
2/6/18	70	66	68	70	68	367,150	184,983
2/7/18	66	59	65	66	64	350,448	173,913
2/8/18	71	61	63	64	63	350,229	172,600
2/9/18	70	64	70	71	68	350,513	184,893
2/10/18	66	63	66	69	65	339,600	177,954
2/11/18	69	60	68	63	65	346,706	177,074
2/12/18	67	60	62	66	63	349,183	171,083
2/13/18	51	47	51	51	50	298,384	139,130
2/14/18	38	36	38	38	37	247,159	107,195
2/15/18	61	53	55	60	56	301,764	153,672
2/16/18	64	55	60	60	59	316,504	162,970
2/17/18	51	40	50	45	47	284,742	130,720
2/18/18	54	37	40	46	42	267,623	118,754
2/19/18	58	50	45	62	50	317,176	139,611
2/20/18	62	59	60	68	61	346,956	166,688
2/21/18	61	56	54	56	56	352,794	153,604
2/22/18	52	45	44	49	46	303,421	129,447
2/23/18	52	48	52	51	51	299,865	141,060

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2/24/18	50	49	50	58	51	286,340	140,618
2/25/18	50	46	51	50	49	281,760	137,507
2/26/18	37	33	39	41	37	252,331	106,567
2/27/18	36	32	33	45	34	251,534	99,499
2/28/18	45	33	32	43	35	248,173	101,965
3/1/18	41	39	41	45	41	265,364	115,651
3/2/18	34	38	35	39	36	245,677	104,261
3/3/18	36	31	33	34	33	224,928	95,785
3/4/18	35	31	32	33	33	228,452	95,004
3/5/18	43	40	43	45	42	271,688	119,045
3/6/18	54	46	52	52	50	290,131	140,148
3/7/18	54	48	57	54	54	298,222	148,338
3/8/18	49	43	52	45	48	299,121	133,634
3/9/18	48	40	43	42	43	259,846	120,286
3/10/18	38	36	37	36	37	231,080	105,577
3/11/18	40	39	43	47	42	244,026	118,756
3/12/18	42	37	45	47	42	237,901	120,027
3/13/18	42	39	47	46	44	246,690	123,019
3/14/18	37	31	37	35	35	236,517	101,033
3/15/18	45	38	40	41	40	244,769	114,670
3/16/18	41	35	39	42	38	249,105	109,444
3/17/18	33	28	30	33	30	234,769	89,215
3/18/18	36	30	28	31	30	229,716	88,095
3/19/18	47	32	32	35	34	242,410	99,870
3/20/18	48	41	41	35	41	283,931	116,059
3/21/18	44	34	35	33	36	273,367	103,154
3/22/18	40	32	31	31	32	237,810	94,765
3/23/18	43	35	34	40	36	246,671	103,759
3/24/18	44	34	37	42	38	240,148	107,977
3/25/18	37	32	33	40	34	240,104	99,259
3/26/18	36	33	33	37	34	278,842	97,796
3/27/18	30	28	34	31	31	239,894	91,600
3/28/18	35	32	32	35	33	233,137	96,153
3/29/18	42	35	36	40	37	257,419	106,283
3/30/18	45	36	34	36	36	254,156	104,572
3/31/18	60	54	53	53	54	294,338	149,565
4/1/18	51	46	45	42	45	278,005	127,600
4/2/18	43	37	38	42	39	280,165	111,468
4/3/18	52	51	55	58	54	317,206	148,856
4/4/18	47	46	54	50	50	318,024	139,595
4/5/18	49	43	45	46	45	275,514	126,415
4/6/18	57	56	60	58	58	321,253	159,852
4/7/18	55	44	51	42	48	299,363	134,845
4/8/18	42	41	44	46	43	284,433	121,422
4/9/18	40	36	40	38	38	283,062	109,453
4/10/18	38	32	37	27	34	268,619	99,500
4/11/18	26	27	28	30	28	233,665	82,375
4/12/18	34	23	23	29	25	222,597	75,977
4/13/18	40	37	40	46	40	256,656	112,987
4/14/18	50	48	50	55	50	286,089	139,779

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4/15/18	47	46	50	51	48	281,030	134,839
4/16/18	44	40	45	44	43	289,133	122,413
4/17/18	33	30	37	37	34	261,728	99,720
4/18/18	35	35	44	44	40	266,441	113,790
4/19/18	23	25	34	33	30	261,325	88,357
4/20/18	25	21	28	29	26	216,396	77,772
4/21/18	24	18	23	28	22	195,696	68,526
4/22/18	20	13	17	22	17	189,265	55,588
4/23/18	16	8	11	14	11	193,186	40,973
4/24/18	26	17	15	25	18	200,784	58,939
4/25/18	19	15	19	19	18	207,229	58,070
4/26/18	23	12	18	21	17	177,190	56,051
4/27/18	32	16	22	23	22	181,846	68,106
4/28/18	28	18	23	20	22	182,116	67,600
4/29/18	14	6	11	6	10	162,210	37,192
4/30/18	7	0	0	0	1	152,357	15,211
5/1/18	16	7	4	18	8	147,833	32,943
5/2/18	17	5	9	13	9	163,237	36,431
5/3/18	11	1	6	10	5	167,948	26,720
5/4/18	11	0	4	2	4	159,370	21,825
5/5/18	11	0	1	1	2	140,195	18,378
5/6/18	16	0	6	0	5	145,782	24,659
5/7/18	0	0	0	0	0	152,906	12,917
5/8/18	17	1	3	8	5	158,119	25,602
5/9/18	25	11	12	10	13	167,779	45,897
5/10/18	23	12	16	18	16	186,085	53,984
5/11/18	26	17	25	24	22	183,107	69,630
5/12/18	19	13	15	17	15	162,783	50,844
5/13/18	1	3	12	9	8	178,545	32,034
5/14/18	2	2	8	8	5	182,595	26,195
5/15/18	13	0	1	0	2	175,815	18,866
5/16/18	1	0	0	0	0	169,060	13,129
5/17/18	23	0	0	0	3	169,659	21,142
5/18/18	12	0	0	1	2	145,607	17,406
5/19/18	24	12	8	13	12	152,047	43,307
5/20/18	13	4	13	11	10	157,136	38,016
5/21/18	4	1	11	7	7	165,529	29,437
5/22/18	4	0	1	0	1	160,494	14,758
5/23/18	0	0	0	0	0	154,554	12,917
5/24/18	0	0	0	0	0	149,555	12,917
5/25/18	0	0	0	0	0	151,185	12,917
5/26/18	0	0	0	0	0	150,722	12,917
5/27/18	0	0	0	0	0	150,257	12,917
5/28/18	0	0	0	0	0	153,825	12,917
5/29/18	2	0	0	0	0	152,978	13,482
5/30/18	5	0	0	0	1	161,840	14,541
5/31/18	6	0	0	0	1	182,230	14,858
6/1/18	20	0	0	0	3	161,486	19,871
6/2/18	21	1	1	2	4	145,262	22,966
6/3/18	12	2	6	2	5	139,250	26,353

6/4/18	9	0	0	0	1	136,558	15,988
6/5/18	11	0	0	0	2	151,936	16,906
6/6/18	5	0	0	0	1	150,767	14,611
6/7/18	9	0	0	0	1	163,799	16,235
6/8/18	6	0	0	0	1	146,050	15,176
6/9/18	12	0	0	0	2	141,460	17,259
6/10/18	8	0	2	0	2	131,257	17,538
6/11/18	8	0	0	0	1	139,187	15,670
6/12/18	3	0	1	2	1	143,916	14,911
6/13/18	0	0	0	0	0	143,870	12,917
6/14/18	2	0	0	0	0	128,824	13,482
6/15/18	2	0	0	0	0	149,806	13,482
6/16/18	0	0	0	0	0	125,699	12,917
6/17/18	0	0	0	0	0	133,017	12,917
6/18/18	0	0	0	0	0	150,706	12,917
6/19/18	0	0	2	0	1	139,130	14,855
6/20/18	0	0	2	4	2	134,674	16,775
6/21/18	6	0	5	3	3	144,284	21,551
6/22/18	3	0	0	0	0	133,759	13,799
6/23/18	3	0	0	0	0	128,931	13,870
6/24/18	13	0	0	0	2	135,422	17,471
6/25/18	10	0	0	0	1	141,321	16,341
6/26/18	10	0	0	0	1	148,095	16,306
6/27/18	0	0	0	0	0	163,163	12,917
6/28/18	0	0	0	0	0	165,398	12,917
6/29/18	0	0	0	0	0	159,145	12,917
6/30/18	0	0	0	0	0	151,136	12,917
Totals	10,422	8,446	9,229	9,322	9,177	80,165,526	27,887,755

* Volumes include interruptible and transportation volumes

** Design Model numbers are used to calculate firm volumes only

MINNESOTA ENERGY RESOURCES - NNG

Customer Counts by PGAC Class - July 1, 2017 through June 30, 2018

Tariff Rate Class	Rate Designation	Jul-17 Average Customers	Aug-17 Average Customers	Sep-17 Average Customers	Oct-17 Average Customers	Nov-17 Average Customers	Dec-17 Average Customers	Jan-18 Average Customers	Feb-18 Average Customers	Mar-18 Average Customers	Apr-18 Average Customers	May-18 Average Customers	Jun-18 Average Customers	Annual Average Customers
GS- Residential	MERC000001	170,356	169,426	170,761	170,630	171,394	171,703	172,292	172,292	172,221	172,355	172,437	173,012	171,573
GS-C&I <1,500 therms/yr (Small)	MERC000005	6,495	6,431	6,466	6,462	6,482	6,523	6,607	6,866	7,323	7,275	7,357	7,335	6,802
GS-C&I <1,500 therms/yr (Small) Emmons, IA	MERC000013	1	1	1	1	1	1	1	1	1	1	1	1	1
GS-C&I >1,500 therms/yr (Large)	MERC000009	9,830	9,735	9,801	9,865	9,837	9,911	9,931	9,574	9,145	9,145	9,153	9,198	9,594
GS-C&I >1,500 therms/yr (Large) Emmons, IA	MERC000014	2	2	2	2	2	2	2	2	2	2	2	2	2
Small Volume Interruptible (SVI)	MERC000015	278	278	281	273	276	264	268	252	271	266	241	260	267
Small Volume Interruptible w/Joint (SVJ)	MERC000019	-5	2	2	2	5	2	2	2	2	2	2	2	2
Large Volume Interruptible (LVI)	MERC000022	58	50	65	70	46	80	70	59	62	52	48	60	60
Large Volume Interruptible w/Joint (LVJ)	MERC000026	2	4	3	-7	3	6	8	5	7	7	7	7	4
Total	MERC000101	9,440	9,425	9,435	9,397	9,412	9,421	9,431	9,423	9,452	9,420	9,423	9,417	9,425
	MERC000102	52	51	51	52	51	52	76	353	573	586	584	584	255
	MERC000103	1,116	1,132	1,136	1,137	1,128	1,131	1,103	825	578	591	594	591	922
	MERC000104	34	32	33	30	38	37	33	35	32	35	34	35	34
	MERC000106	14	14	14	14	14	13	15	15	15	15	15	14	14
		197,673	196,583	198,051	197,928	198,689	199,146	199,839	199,704	199,684	199,752	199,898	200,518	198,955

Futures Contracts WAGOG

*Prices from 7/13/18 NYMEX market

MINNESOTA ENERGY RESOURCES - NNG

Projected Storage Cost - November 2018 through March 2019

Month/ Year	K#118657 NNG Storage (Dth)	LS Power K#132024 NNG Storage (Dth)	LS Power K#133736 NNG Storage (Dth)	Total NNG Storage (Dth)	Projected NNG WACOG	K#118657 NNG Storage Cost	K#132024 NNG Storage Cost	K#132112 NNG Storage Cost	Total NNG Storage Cost	ANR Storage GLGT/VGT (Dth)	ANR Storage GLGT/VGT WACOG	ANR Storage GLGT/VGT Cost
Nov-18	489,384	48,750	97,500	635,634	\$ 2.5162	\$ 1,231,399	\$ 122,666	\$ 245,332	\$ 1,599,396	96,000	\$ 2.6747	\$ 256,772
Dec-18	1,229,734	122,500	245,000	1,597,234	\$ 2.5162	\$ 3,094,284	\$ 308,237	\$ 616,475	\$ 4,018,996	189,100	\$ 2.6747	\$ 505,787
Jan-19	1,229,734	122,500	245,000	1,597,234	\$ 2.5162	\$ 3,094,284	\$ 308,237	\$ 616,475	\$ 4,018,996	189,100	\$ 2.6747	\$ 505,787
Feb-19	1,229,734	122,500	245,000	1,597,234	\$ 2.5162	\$ 3,094,284	\$ 308,237	\$ 616,475	\$ 4,018,996	196,000	\$ 2.6747	\$ 524,243
Mar-19	489,384	48,750	97,500	635,634	\$ 2.5162	\$ 1,231,399	\$ 122,666	\$ 245,332	\$ 1,599,396	85,900	\$ 2.6747	\$ 229,757
Total	4,667,969	465,000	930,000	6,062,969		\$ 11,745,649	\$ 1,170,044	\$ 2,340,087	\$ 15,255,780	756,100		\$ 2,022,346

Month/ Year	NNG Storage Volume (Dth)	NNG Index Price	NNG Index Cost
Nov-18	635,634	\$ 2.5820	\$ 1,641,206
Dec-18	1,597,234	\$ 3.0570	\$ 4,882,743
Jan-19	1,597,234	\$ 3.3465	\$ 5,345,142
Feb-19	1,597,234	\$ 3.3320	\$ 5,321,983
Mar-19	635,634	\$ 2.6325	\$ 1,673,306
Total	6,062,969	\$ 3.1114	\$ 18,864,381
			\$ 3,608,601

Month/ Year	ANR Storage Volume (Dth)	Emerson Index Price	Emerson Market Cost
Nov-18	96,000	\$ 2.4845	\$ 238,512
Dec-18	189,100	\$ 2.6945	\$ 509,530
Jan-19	189,100	\$ 2.9065	\$ 549,619
Feb-19	196,000	\$ 2.8770	\$ 563,892
Mar-19	85,900	\$ 2.6700	\$ 229,353
Total	756,100		\$ 2,090,906
			\$ 68,560

Max NNG-MERC Storage (Storage plan withdrawals through Apr 19) 6,062,969 6,519,321 06/30/18 Storage Balance - NNG-MERC 1,464,079 22.46% 1,361,593
Max ANR Storage (Storage plan withdrawals through Apr 19) 756,100 756,100 06/30/18 Storage Balance - ANR 313,222 41.43% 313,222

Month/ Year	K#118657 NNG Storage (Dth)	LS Power K#132024 NNG Storage (Dth)	LS Power K#132112 NNG Storage (Dth)	Total NNG Storage (Dth)	Projected K#118657 NNG WACOG	Projected K#132024 NNG WACOG	Projected K#132112 NNG WACOG	WACOG NNG Cost	Projected NNG Indexes Price	Projected NNG Index Cost	Projected Storage (Savings)/ Cost
Nov-18	489,384	48,750	97,500	635,634	\$ 2.5162	\$ 2.5162	\$ 2.5162	\$ 1,599,396	\$ 2.5820	\$ 1,641,206	\$ (41,810)
Dec-18	1,229,734	122,500	245,000	1,597,234	\$ 2.5162	\$ 2.5162	\$ 2.5162	\$ 4,018,996	\$ 3.0570	\$ 4,882,743	\$ (863,748)
Jan-19	1,229,734	122,500	245,000	1,597,234	\$ 2.5162	\$ 2.5162	\$ 2.5162	\$ 4,018,996	\$ 3.3465	\$ 5,345,142	\$ (1,326,147)
Feb-19	1,229,734	122,500	245,000	1,597,234	\$ 2.5162	\$ 2.5162	\$ 2.5162	\$ 4,018,996	\$ 3.3320	\$ 5,321,983	\$ (1,302,987)
Mar-19	489,384	48,750	97,500	635,634	\$ 2.5162	\$ 2.5162	\$ 2.5162	\$ 1,599,396	\$ 2.6325	\$ 1,673,306	\$ (73,910)
Total	4,667,969	465,000	930,000	6,062,969	\$ 2.8092	\$ 2.8092	\$ 2.8092	\$ 15,255,780	\$ 3.1285	\$ 18,864,381	\$ (3,608,601)

*Indexes and projected WACOG based on 7/13/18 market prices

MINNESOTA ENERGY RESOURCES - NNG
Projected Call Option Costs - November 2018 through March 2019

Call/Put Options WACOG

Call/Put Options 10,000 Dth/contract

			Nov-18												Dec-18												Jan-19																			
Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost		
1	05/03/18	64479	11	110,000	\$ 3.0000	\$ 330,000	\$ 2.7920	\$ 307,120	\$ 2.7920	\$ 307,120	\$ -	\$ 0.0950	\$ 10,450	\$ 317,570	1	05/10/18	64773	18	180,000	\$ 3.2000	\$ 576,000	\$ 2.9120	\$ 524,160	\$ 2.9120	\$ 524,160	\$ -	\$ 0.0900	\$ 16,200	\$ 540,360	1	05/08/18	64615	11	110,000	\$ 3.5500	\$ 390,500	\$ 2.9990	\$ 329,890	\$ 2.9990	\$ 329,890	\$ -	\$ 0.0950	\$ 10,450	\$ 340,340		
2	06/05/18	65873	11	110,000	\$ 3.1000	\$ 341,000	\$ 2.7920	\$ 307,120	\$ 2.7920	\$ 307,120	\$ -	\$ 0.1000	\$ 11,000	\$ 318,120	2	06/11/18	66008	18	180,000	\$ 3.3700	\$ 606,600	\$ 2.9120	\$ 524,160	\$ 2.9120	\$ 524,160	\$ -	\$ 0.1000	\$ 18,000	\$ 542,160	2	05/17/18	65168	10	100,000	\$ 3.6000	\$ 360,000	\$ 2.9990	\$ 299,900	\$ 2.9990	\$ 299,900	\$ -	\$ 0.0980	\$ 9,800	\$ 309,700		
3	07/05/18	66730	11	110,000	\$ 2.9800	\$ 327,800	\$ 2.7920	\$ 307,120	\$ 2.7920	\$ 307,120	\$ -	\$ 0.1000	\$ 11,000	\$ 318,120	3	07/12/18	66970	17	170,000	\$ 3.2000	\$ 544,000	\$ 2.9120	\$ 495,040	\$ 2.9120	\$ 495,040	\$ -	\$ 0.0970	\$ 16,490	\$ 511,530	3	06/07/18	65942	20	200,000	\$ 3.7000	\$ 740,000	\$ 2.9990	\$ 599,800	\$ 2.9990	\$ 599,800	\$ -	\$ 0.0990	\$ 19,800	\$ 619,600		
4				-	\$ -	\$ -	\$ -	\$ -	\$ 2.7920	\$ -	\$ -	\$ -	\$ -	\$ -	4				-	\$ -	\$ -	\$ -	\$ -	\$ 2.9120	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	4	07/10/18	66845	19	190,000	\$ 3.5000	\$ 665,000	\$ 2.9990	\$ 569,810	\$ 2.9990	\$ 569,810	\$ -	\$ 0.0970	\$ 18,430	\$ 588,240
5				-	\$ -	\$ -	\$ -	\$ -	\$ 2.7920	\$ -	\$ -	\$ -	\$ -	\$ -	5				-	\$ -	\$ -	\$ -	\$ -	\$ 2.9120	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	5				-	\$ -	\$ -	\$ -	\$ -	\$ 2.9990	\$ -	\$ -	\$ -		
6				-	\$ -	\$ -	\$ -	\$ -	\$ 2.7920	\$ -	\$ -	\$ -	\$ -	\$ -	6				-	\$ -	\$ -	\$ -	\$ -	\$ 2.9120	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	6				-	\$ -	\$ -	\$ -	\$ -	\$ 2.9990	\$ -	\$ -	\$ -		
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Total			33	330,000		\$ 998,800		\$ 921,360		\$ 921,360	\$ -		\$ 32,450	\$ 953,810	Total			53	530,000		\$ 1,726,600		\$ 1,543,360		\$ 1,543,360	\$ -		\$ 50,690	\$ 1,594,050	Total	Total		60	600,000		\$ 2,155,500		\$ 1,799,400		\$ 1,799,400	\$ -		\$ 58,480	\$ 1,857,880		
					\$ 3.0267			\$ 2.7920		\$ 2.7920	\$ -		\$ 0.0325	\$ 2,8903						\$ 3.2577			\$ 2.9120		\$ 2.9120	\$ -		\$ 0.0294	\$ 3,0076					\$ 3.5925		\$ 2,9990		\$ 2,9990	\$ -		\$ 0.0271	\$ 3,0965				
NNG	54	83.08%	27	274,154	\$ 3.0267	\$ 829,772	\$ 2.7920	\$ 765,438	\$ 2.7920	\$ 765,438	\$ -	\$ 0.0983	\$ 26,958	\$ 792,396	NNG	86	82.69%	44	438,269	\$ 3.2577	\$ 1,427,765	\$ 2.9120	\$ 1,276,240	\$ 2.9120	\$ 1,276,240	\$ -	\$ 0.0956	\$ 41,917	\$ 1,318,157	NNG	98	83.76%	50.25641	502,564	\$ 3.5925	\$ 1,805,462	\$ 2.9990	\$ 1,507,190	\$ 2.9990	\$ 1,507,190	\$ -	\$ 0.0975	\$ 48,983	\$ 1,556,173		
Other-Cons	11	16.92%	6	55,846	\$ 3.0267	\$ 169,028	\$ 2.7920	\$ 155,922	\$ 2.7920	\$ 155,922	\$ -	\$ 0.0983	\$ 5,492	\$ 161,414	Other-Cons	18	17.31%	9	91,731	\$ 3.2577	\$ 298,835	\$ 2.9120	\$ 267,120	\$ 2.9120	\$ 267,120	\$ -	\$ 0.0956	\$ 8,773	\$ 275,893	Other-Cons	19	16.24%	9.74359	97,436	\$ 3.5925	\$ 350,038	\$ 2.9990	\$ 292,210	\$ 2.9990	\$ 292,210	\$ -	\$ 0.0975	\$ 9,497	\$ 301,707		
Total	65	100.0%	33	330,000	\$ 3.0267	\$ 998,800	\$ 2.7920	\$ 921,360	\$ 2.7920	\$ 921,360	\$ -	\$ 0.0983	\$ 32,450	\$ 953,810	Total	104	100.0%	53	530,000	\$ 3.2577	\$ 1,726,600	\$ 2.9120	\$ 1,543,360	\$ 2.9120	\$ 1,543,360	\$ -	\$ 0.0956	\$ 50,690	\$ 1,594,050	Total	117	100.0%	60	600,000	\$ 3.5925	\$ 2,155,500	\$ 2.9990	\$ 1,799,400	\$ 2.9990	\$ 1,799,400	\$ -	\$ 0.0975	\$ 58,480	\$ 1,857,880		

Feb-19													Mar-19													Total																				
Deal Number	Purchase Date	Trade Number	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	Trade Number	Number Contracts	Financial Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost	Deal Number	Purchase Date	%	Number Contracts	Physical Volume	Strike Price	Strike Cost	Option Price	Option Cost	Pent Settle*	Pent Settle Cost	Over/(Under) Market	Premium Per Unit	Premium Cost	Total Cost		
1	05/15/18	65030	18	180,000	\$ 4.1500	\$ 747,000	\$ 2.9670	\$ 534,060	\$ 2.9670	\$ 534,060	\$ -	\$ 0.0930	\$ 16,740	\$ 550,800	1	05/17/18	65169	14	140,000	\$ 4.0500	\$ 567,000	\$ 2.8750	\$ 402,500	\$ 2.8750	\$ 402,500	\$ -	\$ 0.0980	\$ 13,720	\$ 416,220	1			72	720,000	\$ 3.6257	\$ 2,610,500	\$ 2.9135	\$ 2,097,730	\$ 2.9135	\$ 2,097,730	\$ -	\$ 0.0938	\$ 67,560	\$ 2,165,290		
2	06/12/18	66049	17	170,000	\$ 4.1500	\$ 705,500	\$ 2.9670	\$ 504,390	\$ 2.9670	\$ 504,390	\$ -	\$ 0.0970	\$ 16,490	\$ 520,880	2	06/13/18	66145	14	140,000	\$ 4.3000	\$ 602,000	\$ 2.8750	\$ 402,500	\$ 2.8750	\$ 402,500	\$ -	\$ 0.1000	\$ 14,000	\$ 416,500	2			70	700,000	\$ 3.7359	\$ 2,615,100	\$ 2.9115	\$ 2,038,070	\$ 2.9115	\$ 2,038,070	\$ -	\$ 0.0990	\$ 69,290	\$ 2,107,360		
3	07/17/18	67113	17	170,000	\$ 3.7500	\$ 637,500	\$ 2.9670	\$ 504,390	\$ 2.9670	\$ 504,390	\$ -	\$ 0.0940	\$ 15,980	\$ 520,370	3				-	\$ -	\$ -	\$ -	\$ -	\$ 2.8750	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	3			65	650,000	\$ 3.4605	\$ 2,249,300	\$ 2.9328	\$ 1,906,350	\$ 2.9328	\$ 1,906,350	\$ -	\$ 0.0973	\$ 63,270	\$ 1,969,620
4				-	\$ -	\$ -	\$ -	\$ -	\$ 2.9670	\$ -	\$ -	\$ -	\$ -	\$ -	4				-	\$ -	\$ -	\$ -	\$ -	\$ 2.8750	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	4			19	190,000	\$ 3.5000	\$ 665,000	\$ 2.9990	\$ 569,810	\$ 2.9990	\$ 569,810	\$ -	\$ 0.0970	\$ 18,430	\$ 588,240
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